

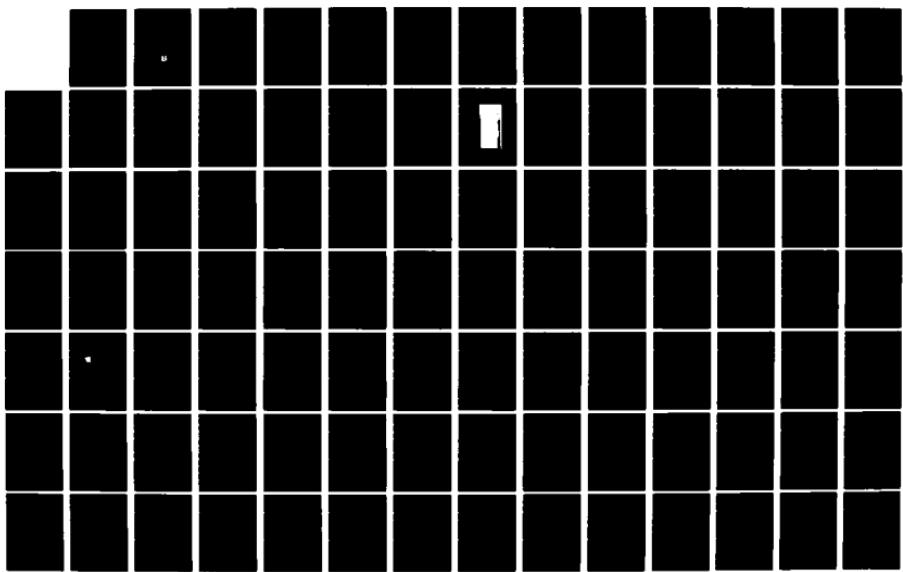
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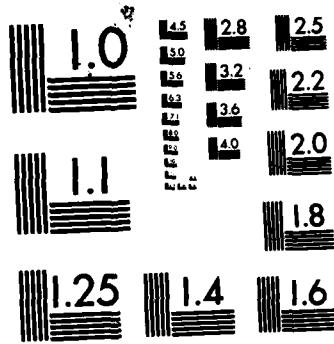
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CEDA USER'S MANUAL

By
J. R. CALABRO
M. M. POZZO

JANUARY 1983

Prepared for

**DEPUTY FOR DEVELOPMENT PLANS
ELECTRONIC SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE**

Hanscom Air Force Base, Massachusetts



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SECTION 1

INTRODUCTION

1.1 CEDA PROJECT 4960

The Human Resources Laboratory (HRL) at Wright Patterson Air Force Base is conducting in-house research on how human factors affect operation of C² systems. This work is being done to complement a larger effort by the Air Force in the area of human performance and training. MITRE has been tasked, under Project 4960, to develop a Capability for Evaluating Decision Aids (CEDA) which will provide an experimental capability to analyze user performance as a result of automated tactical decision aids. This software capability can be used to evaluate new concepts for command and control systems and to refine the human interface to automated decision aids.

To develop such a system, the decision aids and overall capabilities of the Tactical Operations Planner (TOP) Phase 2 system were used as a model. Stimulus control features, data recording for protocol analysis, collection of user response times, and the "pulsing" of peripheral devices for additional dependent measurements are incorporated into CEDA to enable rather detailed C² system evaluations to be made.

1.2 GENERAL

As previously stated, CEDA will assist researchers in determining how the availability and design of automated decision aids affect C² decision making. It was designed to be flexible, permitting expansion and modification in both the number and form of decision aids presented and in the data base used to drive the software.

The CEDA software was developed to provide an experimental capability for analysis of user performance as a result of automated presentation of information. CEDA is controlled by user commands. The initial system supports a two-terminal configuration called a work station. Each station consists of a graphics terminal and a video terminal.

The graphics terminal displays geographic maps from the data base and provides a means by which the user can alter the display to get the desired view of the map.

The video terminal accepts user commands through its keyboard and displays tabular information from the data base. It also displays tabular menus which either accept user commands for more specific types of tabular

information, allows the user to manipulate the information in the data base or permits the user to alter the amount and type of information displayed on the geographic map located on the graphic display.

In addition, data recording can be enabled for a session. The information recorded (user commands, user responses and user response times, system responses) can be used to analyze the performance of the user.

Peripheral devices which measure brain waves or eye movement may also be driven by CEDA for additional dependent measurement of user actions. As with the data recording, this feature need not be invoked to permit CEDA to function properly. Details of these two capabilities are further described in Section 3. Other experimental control features have been added to CEDA. These features are intended to permit precise recording of user actions and provide a framework for comparing session results. These are also discussed in more detail in Section 3.

1.3 CONTENTS

As a user's manual, this document contains a brief overview of the system software, data base, and CEDA capabilities (Section 2, "CEDA Overview"), detailed operating instructions (Section 3, "Operating Instructions") and a "typical session" example (Section 4, "Sample CEDA Session"). Appendices A and B contain the Menus and Tables respectively. A functional flow diagram for each user aid available is presented in Appendix C. System Event and User Response Codes are in Appendices D and E, and Sample Session Data is in Appendix F. A Glossary has been included at the end of the manual for terms, acronyms and abbreviations used throughout this manual which may not be well-known to the user.

For a general description of the software design and data base currently used for CEDA, refer to the "CEDA High-Level Software System Design" document¹.

¹J. Calabro, M. Pozzo, "CEDA High-Level Software System Design," ESD-TR-82-419, Electronic Systems Division, AFSC, Hanscom AFB, MA 01731. (In process)

SECTION 2

CEDA OVERVIEW

2.1 INTRODUCTION

This section presents a brief discussion of the software and data base development and an overview of CEDA functions, tabular features, graphics and decision aids. Section 3, "Operating Instructions", provides more detailed instructions for operating CEDA. As stated, a more thorough discussion of the CEDA software design itself and data base can be found in the "CEDA High-Level Software System Design" document referred to in Section 1.

2.2 SOFTWARE DEVELOPMENT OVERVIEW

2.2.1 Application

The decision aids and data base available in the initial CEDA system were modeled after the TOP Phase 2 system. However, since the purpose of CEDA is not tactical planning, per se, the system was redesigned and expanded to encompass the human factors features discussed in Section 1. The main purposes of this system are twofold: to create a system which allows a variety of tactical command and control concepts to be tested and evaluated, to gather data on how automated aids affect tactical operations.

2.2.2 System Description

The system designed consists of six functional modules and an overall system executive. The main purpose for doing this is to allow ease of maintenance and the addition of future enhancements. This structure affords a great deal of flexibility in that each module may be expanded or altered completely and installed in place of the old one with no effect on the other modules. In addition, this provides a more efficient use of memory since a module need only be brought into memory as it is needed. A brief description of the modules and system executive, which are coded entirely in Fortran IV-Plus, follows.

System Executive - initiates and concludes the session for each user.

User Function Module - controls the handling of a function key invocation and brings the necessary module(s) into memory.

Menu Module - displays all menus and processes the user input to the menu.

Table Module - displays all tables (no user input).

Data Base Module - handles all requests from the other modules to access information from any of the disk-resident data base files.

Graphics Module - performs all operations to display or alter the display on the graphics terminal.

Decision Aid Module - performs weaponeering for weapon choice allocation and airbase choice allocation. Also creates the resulting mission and handles the Air Tasking Order Function.

It should be noted that each module consists of one or more packages, again for ease of modification. For example, the Data Base Module contains a translate package for interpreting the request (known as a DML - data manipulation language - statement) and an I/O package for accessing the files. In this way, a different request language can be used and only the translate package need be replaced, or a new set of files may be supplied and only the I/O package need be replaced.

2.2.3 Data Base

The CEDA (tactical and weaponeering) data base was taken from that used in the TOP system. The tactical data base was originally developed by Air Force Intelligence personnel and weaponeering information was based on results generated by the Automatic Weaponeering Optimization Program (AWOP).

Access to the Data Base is not through direct user interaction; therefore, details of this module are not included in this document. Information can be found, however, in the "CEDA High-Level Software System Design" document as follows:

- o Section 3.4 - Data Base Executive Module description including details of the two packages contained in this module as well as supporting routines.
- o Section 4.2 - Data Base Files description, includes characteristics of each file as well as creation method and a general description.
- o Appendix E - Data Dictionary and Record Layouts, gives the actual record format for each disk-resident file that supports CEDA.

2.3 CEDA CAPABILITIES

2.3.1 User Functions

Listed below are the currently available user functions in key order (see Section 3, "Operating Instructions") and a brief description of what they do.

1. Graphic Options

Allows the user to change the appearance of the graphic display, either by changing the color of elements, or by removing or adding elements to the display.

2. Data Base Search

Allows the user to obtain tabular data such as ordnance load codes, identified targets, friendly airbases, planned missions, etc.

3. Identify

Gives brief information on an element (target or airbase) indicated by the cursor on the graphics screen. Note: Only identified targets are added to the Identified List.

4. Full Page Descriptor

Gives more complete information on an object (target or airbase) which was specified by the user through cursor input, without adding it to the Identified List.

5. Grid

Superimposes a grid on the geographic map to distinguish individual areas for zoom.

6. Zoom 1

Smallest graphics magnification: displays map at magnification used as session start up (all four quadrants).

7. Zoom 2

Zooms a quarter of the map to full screen size

8. Zoom 3

Zooms a sixteenth of the map to full screen size.

9. Airbase Prioritization

Allows the user to set the rules whereby the computer orders and displays the bases capable of supporting a given mission.

10. Interactive Allocator

The actual decision phase of CEDA: provides computer-assessed information during the mission planning process using the information collected from the other CEDA functions (visual aids as well as tabular data). The result of this process is the allocation of aircraft/weapon combinations against specific targets. A maximum of 16 planned missions is possible at one time.

11. Air Tasking Order

Generates an Air Tasking Order, visual as well as hardcopy, from missions currently confirmed.

12. Start/Stop

Initiates and concludes session.

2.3.2 Tabular Displays

As previously stated, CEDA includes two separate visual components: graphics display containing geographic maps with symbols marking the location of targets and airbases and other foreground information to define the current tactical scenario, and tabular display containing tabular information arrayed either in static tables or menus requesting user input.

The current CEDA system uses a DEC VT100 video terminal, which consists of a monitor and detachable keyboard, to present the tabular displays. There are twenty four lines for display on the VT100 terminal. The first twenty-three are used for presentation of tabular displays (called the workspace). Only the last line, the monitor, is reserved for machine error or CEDA generated error messages. The keyboard consists of the standard typewriter keys, special function keys, and a keypad. Figure 2-1 shows the VT100 keyboard layout.

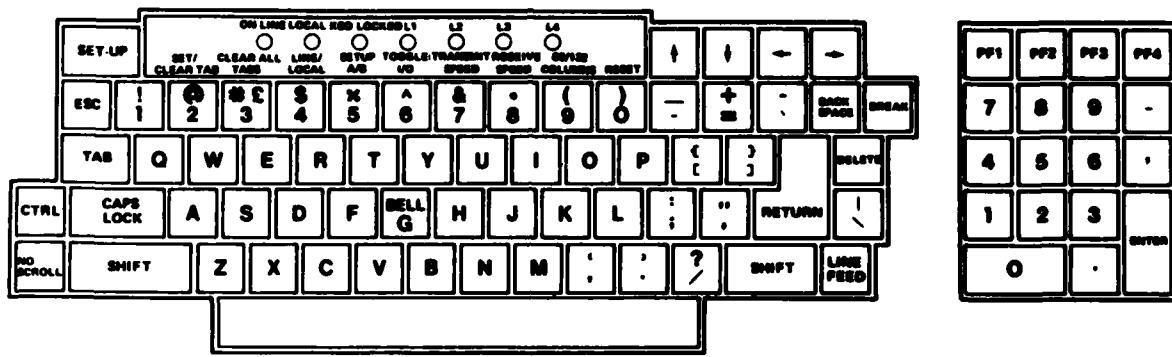


Figure 2-1. VT100 Keyboard

The tabular displays themselves are divided into two categories: menus and tables. Menus accept and act on user input. They offer a series of options from among which the user indicates his choice by typing entries in the appropriate blanks. Through the medium of menus, a user may effect such operations as changing the appearance of the graphics display, requesting data, setting criteria to be used in the allocation process, and actually allocating airbases and weapons against targets. Most menus are accessed directly from function keys. In addition, while the user is within a menu, he may at any time before entering his final response, cancel the menu entirely and exit from the current function.

Tables on the other hand, are to present information only, like the Identified Targets Summary, which gives the identification numbers, BE numbers, names, priorities, types, and other characteristics of all the identified targets. Many tables are accessed from menus, especially the Data Base Search Menu, but some can be obtained directly from function keys. For example, the Identify and Full Page Functions will directly produce tables.

There are twenty-eight menus and tables in the current version of CEDA listed below:

Menus

Graphic Options Menu
Data Base Search Menu
Allocation Menu
Interactive Allocation-Weapons
Decision
Interactive Allocation-Airbase
Decision
Interactive Allocation-Mission
Decision
Planned Missions
Airbase Prioritization Menu

Tables

Target Description
Identified Target Summary
Friendly Airbase Description
Friendly Airbase Summary
Mission Schedule
Enemy Order of Battle-Ground
Enemy Order of Battle-Air
Enemy Order of Battle-Elect
Enemy Order of Battle-SAM/AAA
Fighter Schedule
Alert Aircraft
Command and Control Centers
Target Types
Ordnance Load Codes
Aircraft Characteristics
Identify-Targets
Identify-Friendly Airbases
Air Tasking Order
Continue Session

For the actual format of menus and tables, see Appendices A and B.

2.3.3 Graphics Displays

The CEDA geographically based visual aids are displayed either on a Tektronix 4027 color graphics terminal or a Ramtek 9400 graphics monitor. The Tektronix 4027 color graphics terminal consists of a graphics display monitor and detachable keyboard. The keyboard has the standard typewriter keys, function keys, and a cursor/numeric pad. The graphics cursor is invoked through the use of the cursor/numeric pad. Figure 2-2 shows the Tektronix 4027 keyboard layout. The Ramtek 9400 does not include a keyboard. Cursor control is invoked through the use of a track ball.

The background for all of the displays is a map and nautical miles scale for the tactical operations area. At the beginning of a user session, this map (showing political boundaries, as well as cities of population above 1,000,000) will appear on the graphics screen. On the map are colored symbols marking the location of the various elements of foreground information. Each kind of element is represented by a unique symbol. See Figure 2-3 for a list of symbols representing the foreground information.

A user may modify the geographic display in a number of ways:

1. When a user identifies any target, using the Identify Function, a white identification number appears to its right on the graphics screen.
2. The Zoom 2 Function zooms a user-selected area which represents a quarter of the map to full screen size. At the invocation of Zoom 2, cities with population over 500,000 will appear on the map.
3. The Zoom 3 Function zooms a user-selected area which represents a sixteenth of the map to full screen size. Now all cities with population above 250,000 will appear.
4. The Zoom 1 Function returns the map to the scale it had at the beginning of the session.
5. The Graphic Options Menu allows the user to change the color of sets of symbols or delete (or add) symbols from the map.

2.3.4 Decision Aids

Several decision aids are provided to help the user in the mission planning phase. Once the user has determined which targets to allocate against (using the other features of CEDA) the weapons choice decision aid comes into play.

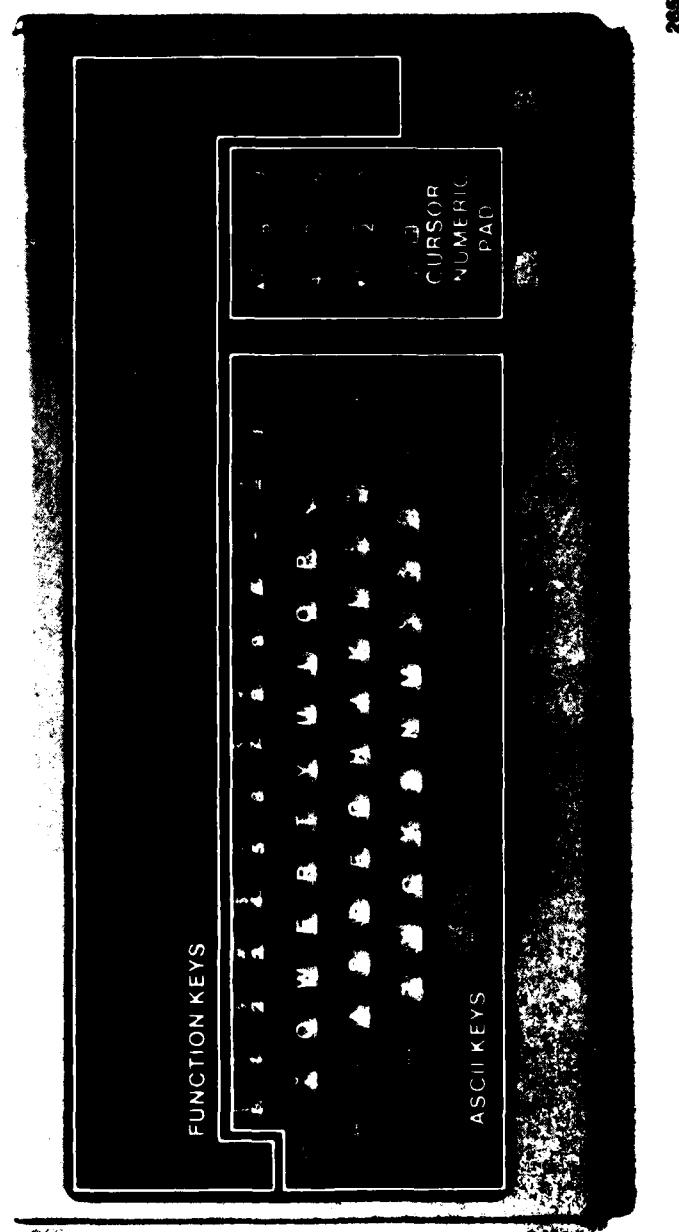


Figure 2-2. Tektronix 4027 Keyboard

Friendly Foreground Information

Friendly Airbases: 

Command and Control Centers: 

Enemy Order of Battle and Nominated Targets

Enemy Airbase: 

SAM Site: 

AAA: 

Bridge: 

EW/GCI: 

POL: 

Miscellaneous Fixed Target: 

Miscellaneous Mobile Target: 

Figure 2-3. Foreground Symbols

Given the specific target and selection criteria for aircraft, ordnance and airbase, weaponeering is performed by the weapons choice decision aid which supplies the user with up to six weapon/aircraft combinations for inspection and selection.

Once the user has made a weapon/aircraft choice, the airbase choice decision aid takes over. This aid provides the user with up to three possible bases that can supply the weapon/aircraft combination requested. The user is prompted however, if no weapon or base can supply the mission. In this case or in the case that the user is not satisfied with the choices, the user has the option to choose a different weapon/aircraft combination.

When an airbase has been selected, the make-mission decision aid builds the mission and presents it to the user. At this point, the user can accept the mission or go back to any of the other decision aids. Rejection of a target can occur at any point.

The remaining decision aid, Air Tasking Order, prints all confirmed missions on the line printer and the VT100 terminal and changes their state within the data base to fragged.

2.3.5 Data Collection

One of the key experimental features of CEDA is the data collection and recording capability, which will permit an analyst to correlate system stimuli with user response. Throughout each user session, data is collected on the following:

- system events - system stimuli (e.g., graphics display, menu)
- user responses - action taken by user after system event
- user response times - time between system event and user response
- menu entries - user entries within each menu

This data is recorded on a disk file under the user's last name (up to eight characters). The first record in the user's file is the login record and it has the following form:

Col.

1-5
7-14
16-19
31-36
46-53

Data

'LOGIN'
user's name
user's rank
session date (mmddyy)
session time (hh:mm:ss)

All remaining records are either system event records or menu entry records. System event refers to any computer driven stimulus presented

to the user (e.g., graphics display, menu display). Each system event is recorded as a system event record. If the event is the display of menu, subsequent records (menu entries) are added to identify user entries made in the menu.

The format for each system event record is as follows:

<u>Col.</u>	<u>Data</u>
1-5	'EVENT'
7-10	system event code
12-21	user response time
23-26	user response code
28-37	if menu, time to complete menu entries otherwise, 0.0 is recorded

As stated above, if the system event is a menu, a list of user entries is also recorded where lower case letters represent user inputs and upper case letters represent unaltered menu values.

Appendix D contains a list of all possible System Event Codes and their definitions. Appendix E contains a list of all possible User Response Codes and their definitions. See Appendix F for a typical session file.

2.3.6 Peripheral Devices

In addition to stimulus/response data recording, CEDA will also drive peripheral devices (e.g. oculometer, electroencephalograph) which can be used to measure eye movement, brain waves, etc. Each system event will initiate the following sequence of pulses:

Generation of system event - pulse channel 1 (on)
Presentation of system event for:

graphics display	- pulse channel 2 (on-off)
menu display	- pulse channel 3 (on-off)
table display	- pulse channel 4 (on-off)
user response	- pulse channel 1 (off)

The pulses are internally generated in the PDP11 minicomputer and are transmitted to the peripheral devices via a DEC DRS-11A 48-bit output module. The generation of these pulses is initiated by a CEDA software routine (see High-level Software Design).

SECTION 3

OPERATING INSTRUCTIONS

3.1 INTRODUCTION

This section is designed specifically for the operator of CEDA, that is, the mission planner. It is a detailed description of all aspects of user interaction with CEDA. It also discusses how a session is set up and defined and how to set up or eliminate any of the data recording or peripheral devices.

Section 3.2 defines actions necessary to initialize CEDA before the actual execution. Section 3.3 then explains the login procedure step by step: what is visible at the terminals initially, requested entries, and how the computer will respond to the entries. Once logged in, all actions for gathering information or for actually planning missions will be through invocation of the various function keys.

Section 3.4 is on the use of each function. For reference, it is divided by function key. For each key there is a general description of what it allows a user to do, followed by a fairly detailed walk-through of its invocation. Menus, tables, and changes in the graphics display are described, as well as the steps a user must take to use the keys and fill in the menus. This section lists features common to several or all CEDA functions.

3.2 SESSION INITIALIZATION

The disk-resident file INPUT.DAT allows certain session characteristics to be set prior to run-time. It is an unformatted data file which can be "edited" (EDT, EDI, etc.) to change session aids or scenarios.

The layout of INPUT.DAT is list-directed (see FORTRAN Language Manual) format as follows:

<u>Line</u>	<u>Data</u>
1	Data recording units (0 = system clock units 1 = system clock units/1000)

2 Number of keys available for session (0 to 17)
 Number of user stations for this session (1)

3 Terminal numbers for each pair (graphics and video)
 of terminals in the user stations
Note: All tasks must be recompiled when terminals
(TT numbers) are changed. INSTALL.CMD must also be
changed appropriately.

4 Key availability for each key on VT100 key pad.
They are ordered from top to bottom, left to right.
(0 = not available, 1 to 17 = function code
corresponds to F# below)

For example the following INPUT.DAT defines a one
station configuration with TT6 for graphics and
TT5 for video, data recording units defined by
the system clock, and 17 function keys available
as defined.

0
17,1
6,5
1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17

Notes: Since the current version of CEDA only
has 12 functions defined, functions
13-17 default to function 12 (Start/Stop).
Also function keys can be reorganized
through the use of INPUT.DAT.
In order to assure correct user input,
the caps unlock key must be set on the
VT100 terminal.

To initiate CEDA, the user should logon to the system as
privileged and enter the following sequence of commands at the VT100
terminal console:

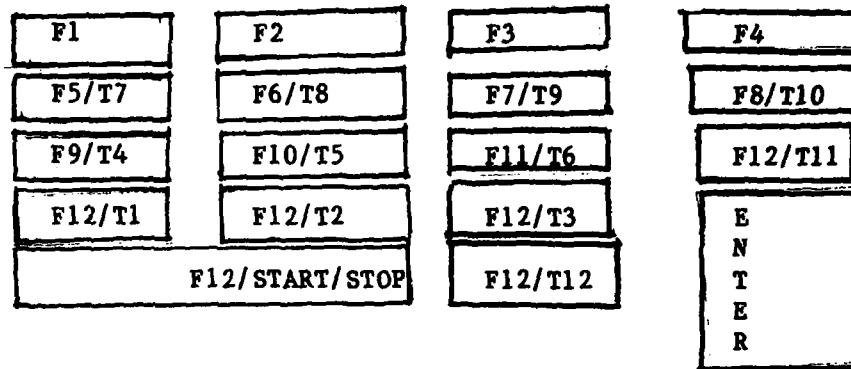
```
> @INSTALL  
> When prompt appears: @DBFILE  
> When prompt appears: @ MISSION  
> When prompt appears: cntl Z  
> RUN SEXEC
```

Once the user has "stopped" the session, he should enter the next command to clean up the system and purge system files:

@END

The VT100 function key definitions initially delivered with the system are shown in Figure 3-1. (Refer to the file INPUT.DAT). Definitions for the functions are as follows:

- F1 - Graphic Options
- F2 - Data Base Search
- F3 - Identify
- F4 - Full Page Descriptor
- F5 - Grid
- F6 - Zoom 1
- F7 - Zoom 2
- F8 - Zoom 3
- F9 - Airbase Prioritization
- F10 - Interactive Allocator
- F11 - Air Tasking Order
- F12 - Start/Stop



where:

F# - indicates the function key as set by INPUT.DAT.
 START/STOP - is used to start and stop the session.
 T# - indicates the paging for tables.
 ENTER - indicates that the user is finished with the current table (tables).

Figure 3-1. Default Function Key Layout

3.3 LOGIN SESSION STARTUP

At the beginning of a CEDA session, the graphics screen will be blank and there will be a form on the VT100 workspace with the following message:

BEGIN SESSION BY PRESSING START/STOP BUTTON.

Press START/STOP button. The button is marked START/STOP and is located to the right of the keyboard. If correctly pressed, a new message will appear on the form requesting the user to fill in his name and rank.

Enter name and rank. Shortly after a map will appear on the graphics screen and the system will be ready for commands.

If the START/STOP button is not pressed when requested, the system will respond:

LOGIN ERROR, PRESS START/STOP BUTTON TO BEGIN.

There are three chances to select the START/STOP button before the system will stop, at which time it must be reinitialized.

3.4 FUNCTION KEYS

CEDA uses function keys as its primary method of entering commands. These include obtaining information to help the user plan missions, allocate weapons against targets, confirm missions, and obtain frag orders of confirmed missions. Below, are descriptions of what each function will allow a user to do and the specific instructions on how to use them.

Note: To turn on the graphics cursor for the Identify and Full Page Functions, the button located on the Tektronix 4027 key pad which is marked with the cross hair cursor must be pressed. The arrows which appear on the keypad are then used to move the cursor to the desired position. If the Ramtek monitor is used, the track ball must be rotated until the desired position is reached.

There are several human factors features common to some or all of the CEDA functions described below. They are listed here as a general introduction to this aspect of CEDA.

Screen	- The graphics screen and the video screen will go blank while a new image (map, menu, or table) is being drawn. Once completed, the screen will be turned on again.
Titles	- Menu titles blink when ready to accept user input. A static menu title indicates that the user is locked out, input has been received, and the system is busy processing. Table titles are always static.
Menu Entry	- TAB key moves the cursor forward from one field to the next for user input. BACKSPACE key moves the cursor backward to the previous field to permit user editing of input. RETURN key indicates the user has completed the menu and wishes to enter his input as it exists on the form.
Menu Errors	- If the user enters invalid data into a menu, an error message will appear at the bottom of the video screen.
Table Paging	- For static tables consisting of multiples pages, the user must access different pages through the use of paging keys on the VT100 keypad as described in Section 3.2.
Table Scrolling	- For dynamic tables consisting of multiple pages, the user must use the T1 key to scroll forward and the T2 key to scroll backward.
Geographic Areas	- The user is restricted in the zoom functions to zoom in or out to predefined, non-overlapping areas. These areas are indicated by use of the grid function.

Note that for all of the following functions which are driven by some type of menu input, the user has the option of cancelling the function at any time before hitting the RETURN key. To cancel menu input and the current function, the user must simply press the START/STOP key on the VT100 keypad rather than the RETURN key.

1. Graphics Options Menu

Description:

This menu (see Figure A-1) will allow the user to change the color of targets or airbases on the graphics display terminal or display or remove targets, airbases, SAM rings or allocation pairing lines for missions already planned.

Simple walk-through:

- Press Function Key #1 to display the Graphics Option Menu. The menu will appear in the workspace with blinking title and the cursor positioned at the first "Y" under the (Y/N) column.
- You can then type an "n" to remove the item from the graphics display or a "y" to display it. "Y" is the default. The tab key will move the cursor to the COLOR column where you may type in any of the following colors:

wht -	White	blu -	Blue	pur -	Purple
red -	Red	yel -	Yellow	blk -	Black
grn -	Green	tur -	Turquoise		

- You can then continue to tab through, making as many alterations as possible. Note that SAM RINGS and ALLOCATION PAIRING LINES do not have a color but are always displayed in red. When you have made all your changes hit RETURN key.
- The title will stop blinking to indicate the system is processing your request and shortly you will see the changes on the graphics display.
- You may return to the Graphics Option Menu as many times as you like. Each time the initial menu will reflect the changes you made the previous time.

2. Data Base Search Menu

Description:

This menu (see Figure A-2) allows the user to obtain one of two types of information. He may either call up reference tables that give brief data on the members of specified groups of elements, or he may choose from two categories for more complete descriptions of individual members.

The menu presents the categories Friendly Airbases, and Mission Schedule in a column to the left. To the right is a column of available reference tables. The user may only indicate one choice by typing a "y" in the appropriate place: either one category or one item under the reference tables heading. The default for every choice on the Data Base Search Menu is "n".

* * * * *

Simple walk-through:

- . When you have pressed Function Key #2, the Data Base Search Menu will appear on your workspace with title blinking and cursor positioned in the first blank under the CATEGORY heading.
- . If you want detailed information on any particular element within a category (FRIENDLY AIRBASES, for example) or a reference table (ENEMY ORDER OF BATTLE, for example) push TAB key until the cursor reaches the blank opposite the desired title and type "y" and then press RETURN key.
- . After you have pressed RETURN key, the title of the Data Base Search Menu will stop blinking to indicate the system is responding and the menu will be replaced by the desired description.
- . If you want more than one category, or table, or some combination of them, you must return to the Data Base Search Menu by pressing Function Key #2 each time.

3. Identify

Description:

The Identify Function will give terse data on any single target or friendly airbase on the graphics screen. It should be noted that the user identifies a target, adding it to the Identified List, in order to allocate against it.

* * * * *

Simple walk-through:

- Move the graphics cursor until it covers the target or airbase that interests you.
- Press Function Key #3.
- A brief table (see Figures B-16 and B-17) will appear in the workspace identifying the item. If it is a target, a white numeral will simultaneously show up to its right on the graphics screen, making it a member of the Identified List.
- If you wish to unidentify a target, repeat the above operation; the target's number will be erased; however; the rest of the identified targets will not be renumbered to account for the space.
- You may identify up to 99 targets and as many bases as you like.

4. Full Page Descriptor

Description:

Operating the same way as the Identify Function, the Full Page Descriptor gives more complete information on the object of interest.

* * * * *

Simple walk-through:

- Move the graphics cursor to cover the item you wish described.

. Press Function Key #4. You will get a detailed description on the workspace (see Figures B-1 and B-3) of the item you chose. The Full Page Descriptor does not add items to the Identified List.

5. Grid

Description:

The grid is a user visual aid. It superimposes a grid onto the graphics screen to define the individual zoom areas.

* * * * *

Simple walk-through:

- . Push Function Key #5.

6. Zoom 1

Description:

The purpose of zoom 1 is to return the map to its original scale after it has been zoomed in.

* * * * *

Simple walk-through:

- . Push Function Key #6.

7. Zoom 2

Description:

Zoom 2 zooms the map in by a factor of 2. It will center the quadrant of your choice on the screen and zoom it to full screen size.

* * * * *

Simple walk-through:

. Place the graphics cursor in the desired quadrant. It might be helpful to invoke the grid function first so you can clearly see the quadrant boundaries, but it is not necessary to do so.

- . Push Function Key #7.

8. Zoom 3

Description:

This zooms the map in by a factor of 4.

* * * * *

Simple Walk-through:

- Place the graphics cursor inside the desired area. Again, the grid may be useful.
- Press Function Key #8.

Note: The invocation of any of the zoom functions will erase the grid.

9. Airbase Prioritization

Description:

There are about one hundred combinations of weapons and airbases that could theoretically be allocated against a given target. But only the first six weapons and first three airbase possibilities actually show up on the workspace. This menu (see Figure A-8) allows the user to set the rules by which the system orders the airbase possibilities.

* * * * *

Simple walk-through:

- Press Function Key #9 to obtain the Airbase Prioritization Menu. The menu will appear in the workspace with a blinking title and the cursor positioned in the first blank.
- Indicate your ranking of criteria by typing a numeral between 0 and 9 (0 is for no ranking, 1 is the highest priority) in the blank next to each criterion. The default rules are currently set as 1, 0, 0, 0, 0, 0, 0, 0, respectively (ranked by closest only) and may be used without invoking this function unless a different prioritization scheme is desired. The user ranking however only remains in effect until the end of the next allocation process. At this point they revert to the default values.

- Tab to subsequent choices and back tab to modify earlier ones until you are satisfied.
- Then press RETURN key. The title of the menu will stop blinking to indicate that the computer is processing your input.

10. Interactive Allocator

Description:

All of the other functions and visual aids in CEDA support the Interactive Allocator. It is at this stage where, based on information gained in the previous sections, the user actually makes a choice of targets to attack and a combination of weapons and airbases to allocate against these targets.

When Function Key #10 is pressed, a menu (see Figure A-3) will appear on the workspace. At the top, under SELECTION CRITERIA FOR TARGETS the user must either specify by number in the Identification List the targets he wishes to attack or type "all" to attack all identified targets.

Under SELECTION CRITERIA FOR RESOURCES the user has the option of typing in the aircraft and ordnance types(s) and friendly airbases to be considered. He may also choose a range of time for time-over-target and either the number of aircraft or probability of damage desired.

Pressing the RETURN key when finished will call a second menu (see Figure A-4) to the workspace. At the top is displayed the identification of one of the targets chosen. This menu allows the user to choose one specific weapon/aircraft combination from among those recommended for allocation against that target. He also has the option to reject the mission entirely at this point. The graphics display also indicates the target being considered by changing its color to white during the allocation process for this target. Once the process is completed, its original color is restored.

If the weapon/aircraft combination chosen is available, then a third menu (see Figure A-5) will come up. At the top of the menu the identification of the target will be displayed, followed by the possible weapon/aircraft combinations, with the user's choice marked. Next the system offers a number of airbases which would be able to supply the weapon/aircraft combination chosen. From these, the user may select one or go back to the Weapon Decision Menu (Figure A-4) and reselect a different weapon/aircraft combination or reject the target altogether.

Finally, if the target is not rejected, a proposed mission will appear (see Figure A-6) and the user may accept the mission, or, if unsatisfied with the probability of damage, or the position of the base with respect to its proposed target, or anything else, may instead reselect another weapon/aircraft combination or base, or reject the mission and target entirely.

The Weapon Decision Menu (Figure A-4) will be redisplayed, with the identification number of the next target requested. The whole procedure will repeat until all of the targets indicated on the original interactive allocation menu are exhausted.

At the end of the allocation process, a Planned Missions Menu (see Figure A-7) will appear on the workspace. Listed will be all of the missions accepted during the allocation process as well as any other planned missions (proposed and confirmed, but not flagged). Here the user may either confirm or reject these missions and may also choose to have the allocation pairing lines removed or displayed on the graphics display terminal. As stated, a maximum of 16 planned missions is possible at any one time.

* * * * *

Simple walk-through:

. The Allocation Menu is the first one to appear when you push Function Key #9. The menu will appear with a blinking title and the cursor positioned in the first blank. Indicate the targets against which you would like to fly missions by typing in their Identification List numbers: the white numerals that appear to their right on the graphics screen. You can type "all" to allocate against all identified targets.

If you would like to specify resources, advance the cursor by using the TAB key and enter up to four aircraft types (f111e, a7d, etc.), no more than one ordnance type (mark82, rocrod, etc.), up to five friendly air-bases (edvv, edsb, etc.), the time-over-target range (0100, 1400, etc.), and the number of aircraft or probability of damage. For "TOTZ" if the lower limit is omitted, 0100 is assumed and if the upper limit is omitted 2400 is assumed.

. Press RETURN key when you are satisfied. The title of the menu will stop blinking to signify that the computer is acting on your input.

. When ready, the Weapon Decision Menu will appear with a blinking title and a list of possible weapon/aircraft combinations. The threats within the target area are also displayed at the bottom of the video terminal. If no weapons can satisfy the selection criteria a message, "NO WEAPON CAN SATISFY PD" will appear at the bottom. The graphics display will show the current target in white.

. For this target, choose whichever weapon/aircraft combinations you prefer by typing a "y" in the select column.

. When you are satisfied, press RETURN key. The title will stop blinking.

. The Airbase Decision Menu will appear with a list of possible airbases which can satisfy the weapons chosen. If no airbase can supply the combination you ordered, you will receive an error message that reads: "NO AIRBASE CAN SATISFY WEAPON CHOICE AND SELECTION CRITERIA". In that case, reselect. It may be that there are insufficient amounts of all of the listed weapons. When this happens, you must reject the target and begin again with less stringent selection criteria.

. If your choice of weapons can be supplied by one or more airbases, then the Interactive Allocation/Airbase Decision Menu will be displayed with the information already on the workspace. All of the bases listed will be able to satisfy your mission request.

. Choose one by typing a "y" opposite it in the SELECT column.

. A suggested mission will then appear. If none of the possible missions satisfy you, then type a "y" into "reject mission and target" at the bottom, in which case you will begin selecting weapons for a second target, or reselect weapons or base for this target, by backtabbing to the appropriate spaces. You must delete your previous choices.

• You also have the option to reselect either the weapon or base at this time.

• If and when you are satisfied with a mission, type "y" in the ACCEPT MISSION space. A new target will be displayed in white on the graphics screen, and you will make weapons and base selections for this target. The process will continue until all of the targets you marked on the original Allocation Menu have either been allocated or rejected.

• At that point, the Planned Missions Menu will come up with blinking title. All of the missions that you have affirmed in this and earlier phases of the Allocation process will appear. For each mission you have the choice to finally confirm or reject, and to remove or display its allocation pairing lines.

• Type "c" for confirm or "r" for reject in the first column opposite each mission and "d" for display or "r" for remove in the second column.

11. Air Tasking Order

Description:

The purpose of the Air Tasking Order is to send all confirmed missions to wing command, thereby changing their status from a planned mission to a scheduled mission (fragged). These missions will simultaneously be printed by the line printer and typed on the video screen (see Figure B-18). By generating an ATO, the user reduces the number of planned missions (maximum of 16).

* * * * *

Simple walk-through:

Once you have completed the Planned Mission Menu and pressed RETURN key, push Function Key #11.

12. Start/Stop

Description:

The CEDA session will be initiated and ended by pressing the START/STOP key.

* * * * *

Simple walk-through:

- When you are ready to begin, press START/STOP.**
- After you have received your last Air Tasking Order, end the session by pressing START/STOP.**

SECTION 4

SAMPLE CEDA SESSION

4.1 INTRODUCTION

This section begins with a discussion of the CEDA problem: what the user is trying to achieve, and how he can best marshall the capability of CEDA to that end. There is also a run-through of a typical session. This will by no means investigate all of the possibilities or complexities of the system, but rather will give the reader a chance to see how each of the functions look as they are used in conjunction with each other and when actual missions are being considered.

4.2 THE TACTICAL SCENARIO

As the user of CEDA, you are trying to plan tomorrow's missions through automated aids as opposed to manual means. Given the scenario for the session (location and definition of the conflict) and the goal (e.g., seek allocations that would quickly achieve air supremacy), the types of missions to be planned that would best accomplish this goal must first be determined.

Once you have decided on your approach, your task is to plan missions by allocating weapon/aircraft combinations from specific airbases against all of the selected targets.

Before actually going into the allocation phase of CEDA it is best to learn as much as possible about the theatre presented to you. There are many tools supplied with CEDA that allow you to do this. The graphics tools, such as the Graphic Options Menu, Grid and Zoom Functions allow you to alter the graphics information displayed on the graphic terminal. In this way, you can narrow the amount of information appearing on the graphics display to focus on specific targets by changing their color, or enlarge a particular area of the map for closer inspection.

There are many tables of information available to you through the Data Base Search Menu that give general information about the friendly airbases, command and control centers, ordnance load codes, aircraft specifications, target types, etc.

In addition, brief or detailed information about a particular target or airbase is available via the Identify and Full-Page Descriptor Functions.

Once you have determined exactly which targets to allocate against and the friendly airbases and their available unit (or squadron) configuration you are ready to begin allocation.

The following section describes a simple typical session which will show the general procedure you should employ when using CEDA.

4.3 THE CEDA SESSION

Scenario: Tactical planning in the early stages of a conflict in central European area (current map).

Goal: To seek allocations (plan missions) that would quickly achieve air supremacy.

Method: Strike enemy airbases and early warning/ground control intercept cites. (EW/GCI).

Step 1 Startup System

The scenario and the goal are presented to the user. Since all of the function keys will be available to the user for this session, INPUT.DAT need not be altered. (See section 3.2) After logging on as privileged type the following commands:

```
> @INSTALL
> When prompt appears: @DBFILE
> When prompt appears: @MISION
> When prompt appears: control Z
> RUN SEXEC
```

The user will deduce the approach (method) to accomplish the goal presented by the person running the session and press the "START/STOP" key in response to the message currently present in the workspace. He will respond with name and rank to the next two questions (See Section 3.3, "LOGIN SESSION STARTUP"). The map will be displayed and CEDA is ready for use.

Step 2 Invoke Graphic Options Menu to Get Better View of Potential Targets

To better view the potential targets, user invokes Key #1, Graphic Options Menu. To better see the targets, he either assigns enemy order of

battle/electronic a unique color or assigns all other options "blk" (background) and only targets and friendly bases colors.

Step 3 Invoke Identify Function to Determine Which Targets Are Airbases And EW's

Since the user is only interested in airbases and targets of type EW, he must determine which of the targets on the screen they are. To do this, he must use the Identify Function for each enemy order of battle/electronic target. If it is not an EW or an airbase he can unidentify it by re-identifying it (pressing the Identify Key again). When he has completed this for each target, the ones he is interested in will have a number on the lower right side of the target on the display screen.

Step 4 Invoke Full-Page Descriptor Function to Find Out More Information about Targets

The user can find out more information about each identified target by using Key #5, the Full-Page Descriptor Key. He can use this to further narrow his choice of targets. (Any undesired targets are simply unidentified by pressing the Identify Key on a previously identified target).

Step 5 Invoke Data Base Search Function

The user now depresses Function Key #2 to invoke the Data Base Search Menu. He then types a "y" in the ELECTRONIC ORDER OF BATTLE category to see that he has, in fact, identified all the desired targets. He then reinvoke the DBS Menu and types a "y" in the IDENTIFIED TARGETS category to recheck his selections. He reinvoke the DBS Menu and types a "y" in the FRIENDLY AIRBASES category to retrieve information on all twelve bases.

Step 6 Invoke Allocation Function/Target Choice

Now that the user has determined several targets to propose strikes against, he invokes the Allocation Function (Function Key #9). He then specifies his

selection criteria for targets by typing the ID #'s in the appropriate spot. He chooses not to make any resource selection.

Step 7 Invoke Weapon and Airbase Decision

At this point, the Weapon Decision Table is presented. The user selects a weapon/aircraft combination and waits for airbase information. Next a set of airbases that can supply that weapon/aircraft combination is presented. The user makes his selection. He now has the choice of accepting the mission, rejecting the mission, or reselecting the weapon or base. Assume he has decided to accept the mission.

Step 8 Confirm and Display the Missions

After he has invoked steps 6 and 7 for all the desired targets, he will be presented with a table of planned missions. He can then confirm or reject, display or remove all or selected planned missions. He also has the option of doing nothing thereby postponing the decision until later. Assume he confirms.

Step 9 Create the Air Tasking Order

At this point he depresses the ATO Key to send the Air Tasking Order to wing commands (hard copy) and has completed the allocation/mission generation process for the selected targets.

At this point, the user may wish to allocate weapons against other sets of targets. To do so, the above steps could be repeated until all targets have missions assigned to them. This example sets up a possible sequence of actions that a user might take, however, each situation presents its own specific problems and CEDA functions should be invoked in a way that the user finds to be the most natural, straightforward manner. Once the user has solved the problem presented to his satisfaction, the session is ending by pressing the START/STOP Key.

APPENDIX A

MENUS

GRAPHIC OPTIONS MENU

EVENT ORDER OF BATTLE	SELECT: (Y/N)	COLOR
ORDD	Y	YL
AIR	Y	YL
ELECTRONIC	Y	YL
SAY/AA	Y	YL
INITIATED TARGETS	Y	YL
IDENTIFIED TARGETS	Y	YL
PRIMARLY AWARES	Y	YL
SAYING AS CONTROL	Y	YL
SAY RINGS	Y	YL
ALLOCATION PAIRING LINES	Y	YL

Figure A-1. Graphic Options Menu (MNO1)

DATA BASE SEARCH MENU

SELECT ONE ONLY

CATEGORY	SELECT (Y/N)	REFERENCE TABLES	SELECT (Y/N)
ENEMY AIRCRAFTS	Y	ENEMY ORDER OF BATTLE	
MISSION SCHEDULE		GUARD	
		AIR	
		ELECTRONIC	
		SAW/AAA	
		IDENTIFIED TARGETS	
		FIGHTER SCHEDULE	
		ALERT AIRCRAFT	
		COMMAND AND CONTROL	
		TARGET TYPE	
		DRONE LOAD CONES	
		AIRCRAFT SPECIFICATIONS	

Figure A-2. Data Base Search Menu (MN02)

ALLOCATION MENU

SELECTION CRITERIA FOR TAKETS

IDENTIFIED LIST

(All/1,2,...,N)

SELECTION CRITERIA FOR RESURSES

AIRCRAFT TYPE (S)	-----	-----	-----	(F4E, A7D, ...)
CONTRACT TYPE	-----	-----	-----	(S CHAR)
AIRCRAFT (S)	-----	-----	-----	(ICAO NAME)
TOTZ	FROM:	000	TO:	999
NUMBER OF AIRCRAFT	-----	(2 DIGITS)	-----	-----
-----	-----	-----	-----	-----
PROBABILITY OF DAMAGE	-----	02	DIGITS	-----

Figure A-3. Allocation Menu (MN07)

INTERACTIVE ALLOCATION/WEAPON DECISION

TO: 151 TEST UNIT PH TUE 19 JAN 1997 0111 141100Z

DECISION: FOR THE ABOVE TARGET, CHOOSE ONE OF THE RECOMMENDED WEAPONS.
WEAPONS: 50 MM AGM, 100MM AGM, 110MM AGM, 110MM AGM (LITF), KIAS, PD, HIGH SELECT

— — — — —
— — — — —
— — — — —
— — — — —
— — — — —

REJECT TARGET: ■

Figure A-4. Interactive Allocation/Weapon Decision (MN08)

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Figure A-5. Interactive Allocation/Airbase Decision (MN09)

ALLEGATION OF A FRAUD

Figure A-6. Interactive Allocation/Mission Decision (MN9B)

PLANNED MISSIONS

TO DISPLAY OR REMOVE MISSIONS (CARRIER CARRIER)
TO CONTINUE OR REJECT MISSIONS (CARRIER CARRIER)

MISSIONS 000 PAGE 0/5 TGT-E TYP 90 RE SITE 1A 0/8

Figure A-7. Planned Missions (MN10)

AIRBASE PRIORITYZATION CRITERIA

NOT ALL AIRBASE CAN SATISFY A RESCUE REQUEST, AIRBASE WILL BE
CHECKED BY THE FOLLOWING CRITERIA.

DAY NOT BY PRIORITY RANKS THRU 1 TO 5.

DISTANT FROM TARGET

0.0257

0.0157

QUANTITY OF RESCUE (MAXIMUM)

AIRWAVES

ORANGE

SUPPORT CAPABILITY

EU

EU

WICAP

AIRBASE CONDITIONS

WEATHER (HIGHEST CEILING)

ACTIVITY (MINIMUM PLANNED MISSIONS)

Figure A-8. Airbase Prioritization (MN11)

APPENDIX B

TABLES

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NAME	JOHN	LAST NAME	DOE	ADDRESS	1234 FAIRFIELD DR	CITY	FAIRFIELD	STATE	WA	ZIP	98335	PHONE	555-1234	EMAIL	JOHN@DOE.COM
INVESTIGATOR INFORMATION															
NAME	JOHN	LAST NAME	DOE	ADDRESS	1234 FAIRFIELD DR	CITY	FAIRFIELD	STATE	WA	ZIP	98335	PHONE	555-1234	EMAIL	JOHN@DOE.COM
NAME	JOHN	LAST NAME	DOE	ADDRESS	1234 FAIRFIELD DR	CITY	FAIRFIELD	STATE	WA	ZIP	98335	PHONE	555-1234	EMAIL	JOHN@DOE.COM
NAME	JOHN	LAST NAME	DOE	ADDRESS	1234 FAIRFIELD DR	CITY	FAIRFIELD	STATE	WA	ZIP	98335	PHONE	555-1234	EMAIL	JOHN@DOE.COM

Figure B-1. Target Description (TB01)

IDENTIFIED TARGET SUMMARY

ID	NAME	PSI	TYPE	AS	NSN	TUZ	CCU	LAT/LONG
10	EE							

Figure B-2. Identified Target Summary (TB03)

Figure B-3a. Friendly Airbase Description (TB04)

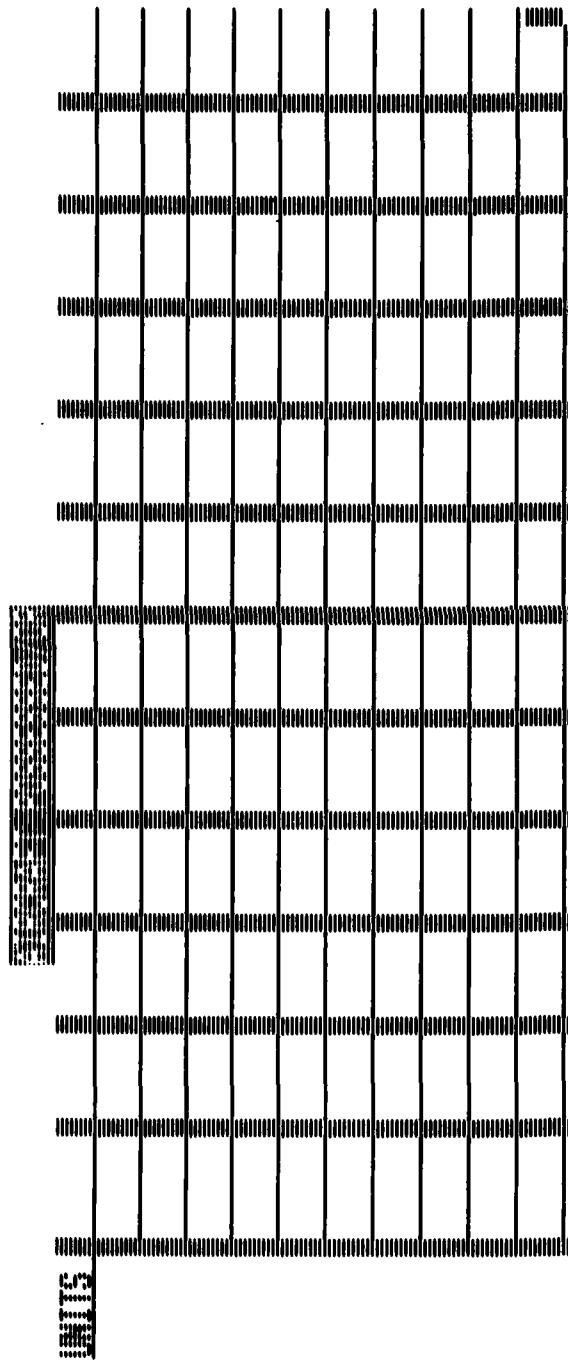


Figure B-3b. Friendly Airbase Description (Aircraft Possessed)

1120	045	A	2/A-10	MARK-82	CBW	DATA	5255/1141	0	000/000
1121	045	A	2/A-10	MARK-70	CBG	DATA	5104/1107	0	040/050
1046	068	C	2/T-40	ATK-70	SLX	SLL	5117/1226	15	1409/1700
1052	065	A	4/T-45	H-10	CBG	GLASS	5040/1110	0	100/120%

Figure B-3c. Friendly Airbase Description (Alert Aircraft)

TYPE	TYPE	TYPE	TYPE	TYPE	TYPE
------	------	------	------	------	------

Figure B-3d. Friendly Airbase Description (Ordnance)

NUMBER LENGTH WITH CONDITION SURFACE ORIENTATION 514

Figure B-3e. Friendly Airbase Description (Runways)

TYPE	WEIGHT	CAPACITY	RECOVERY RATE	RESPONSE TIME
------	--------	----------	---------------	---------------

Figure B-3f. Friendly Airbase Description(Petroleum, Oil and Lubricants)

FRIENDLY AIRBASE SUMMARY

PAGE 1 OF 12

EC7

FRIENDLY AIRBASE - FRIENDLY AIRBASE

UNIT	FLUG	DA	0179	0075
ABGU	25			
FLUG	35			
FLUG	2			
FLUG	5			
STIL	10			
STAD	10			

FRIENDLY AIRBASE - FRIENDLY AIRBASE

ABGU	MARK21
4417	50020
4462	20011

Figure B-4a. Friendly Airbase Summary (TB05) (Page 1)

FRIENDLY AIRBASE SUMMARY

PAGE 2 OF 12

END

FRIENDLY AIRBASE SUMMARY

UNIT	F4D	F4F	F4G	F4H	F4J	F4K
ABD	15					
EDP		20				
EDG			13			
EDG2	15					
EDG3		12				
EDG4			4			
EDG5	15					
EDG6	15					
EDG7	15					
EDG8	15					
EDG9	10					
<hr/>						

ABD	F4L	F4M	F4N	F4O	F4P
EDG1	2004	2005	2006	2007	2008
EDG2	1000	1000	1000	1000	1000

Figure B-4b. Friendly Airbase Summary (TB05) (Page 2)

FRIENDLY AIRBASE SUMMARY

PAGE 3 OF 12

CHAN

UNIT **F4C** **5130** **5746** **715**

CBAD	15
CBB	15
CBG	15
CBH	15
CBK	15
CBM	20
CBP	15
CBQ	15
CBR	15
CBT	15
CBU	15

UNIT **F4C** **5130** **5746** **715**

CBG	15
CBH	15
CBK	15
CBM	15
CBP	15
CBQ	15
CBR	15
CBT	15
CBU	15

Figure B-4c. Friendly Airbase Summary (TB05) (Page 3)

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	6117	6118	6119	6120
6117	6117	6118	6119	6120
6118	6118	6119	6120	6121
6119	6119	6120	6121	6122
6120	6120	6121	6122	6123

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1996 0052 2000
1997 0053 2001

Figure B-4d. Friendly Airbase Summary (TB05) (Page 4)

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Figure B-4e. Friendly Airbase Summary (TB05) (Page 5)

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DMG

UNIT	AIR	0130
8888	15	
5611	15	
7062	2	

CAST	0132	0133
1403	0132	0133
1404	0131	

Figure B-4f. Friendly Airbase Summary (TB05) (Page 6)

UNIT FAC 0170 F15 F16 F17 K0135

00118	15
00119	1
00120	12
00121	15
00122	15
00123	10
00124	15
00125	15
00126	10
00127	10
00128	10
00129	10
00130	10
00131	10

00121	0001	0002	0003	0004	0005
00122	0006	0007	0008	0009	0010
00123	0011	0012	0013	0014	0015

Figure B-4g. Friendly Airbase Summary (TB05) (Page 7)

12 11 09 08 07

12 11 09 08 07

EDM

001	010	0130
002	015	
003	010	
004	015	

12 11 09 08 07

001	0024	0000
002	0000	0001
003	0017	2000

Figure B-4h. Friendly Airbase Summary (TB05) (Page 8)

1967	1968	1969	1970	1971	1972
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000

268

Figure B-4i. Friendly Airbase Summary (TB05) (Page 9)

21 20 376

1966 1967 1968

AM3

2	120
31	160
1	390
72	614

600	1025
625	710
630	645

ORIGIN

UNIT	FAC	FAC	FAC
10100	15		
10101	10		
10102	20		
10103	12		

AIRB	BLU	WHT
10100	00021	00001
10101	00002	00000

Figure B-4k. Friendly Airbase Summary (TB05) (Page 11)

FATIGUE AIRCRAFT SUMMARY

PAGE 12 OF 12

FIG

FATIGUE AIRCRAFT SUMMARY

UNIT	F4D	KC135	F15	F5
RAAC	15			
RAAF		20		
SATIN			13	
SULLY	15			
YANKE			15	

FATIGUE AIRCRAFT SUMMARY

AIRCRAFT	SUBJ	BLDG
SH23	AG445	AG470
SH23	1907	1905
SH23	1905	

Figure B-41. Friendly Airbase Summary (TB05) (Page 12)

THE SCENE

Figure B-5. Mission Schedule (TB06)

ENEMY ORDER OF BATTLE
SECOND PHASE OF BATTLE

NAME	TYPE	LAT/DEC	LONG	NAME
BLITZERBERG	TB6	5255/4141	17 0605	
BLITZERBERG-2	TB6	5214/4111	17 0439	
BLITZERBERG-3	TB6	5159/4105	17 0439	
BLITZERBERG-4	TB6	5133/4102	17 0439	
BLITZERBERG-5	TB6	5057/4153	17 0439	
BLITZERBERG-6	TB6	5153/4142	17 0439	
BLITZERBERG-7	TB6	5158/4142	17 0439	
BLITZERBERG-8	TB6	5127/4151	17 0439	
BLITZERBERG-9	TB6	5058/4105	17 0439	
BLITZERBERG-10	TB6	5078/4105	17 0439	
BLITZERBERG-11	TB6	5013/4143	17 0439	
BLITZERBERG-12	TB6	5209/4142	17 0439	
BLITZERBERG-13	TB6	5049/4136	17 0439	
BLITZERBERG-14	TB6	5120/4139	17 0439	
BLITZERBERG-15	TB6	5203/4107	17 0439	
BLITZERBERG-16	TB6	5145/4159	17 0439	
BLITZERBERG-17	TB6	5200/4159	17 0439	
BLITZERBERG-18	TB6	5159/4139	17 0439	

Figure B-6a. Enemy Order of Battle-Ground (TB07) (Page 1)

ENEMY ORDER OF BATTLE
GERMAN ARMY AT BATTLE

PAGE 2 OF 3

NAME	TYPE	ARMAMENT	WEAPONS	WEAPONS
DEUTSCH	ARTL	5104/1107	7308/845131	137 0430
DAULGOLD	ARTL	5040/1139	7319/809662	137 0430
DALE-951	ARTL	5127/1208	7317/896299	137 0430
DALE-9531	ARTL	5128/1153	7319/876153	137 0505
DALE EAST	ARTL	5128/1201	7317/81462	137 0155
DEA	ARTL	5055/1209	7317/893139	137 0615
DEUTSCHWALDE	ARTL	5227/1403	7319/138945	137 0645
DAUERBERG	ARTL	5219/1224	7319/181165	137 0430
DAUERBERG	ARTL	5225/1231	7319/16762	137 0505
DEUTSCHLITZ	ARTL	5123/1740	7319/873165	137 0155
DEAEBERG	ARTL	5225/1231	7319/16362	137 0615
DEUTSCH	ARTL	5117/1226	7319/509449	137 0605
DEUTSCH	ARTL	5128/1220	7319/804711	137 0430
DEUTSCH	ARTL	5210/1432	7319/153418	137 0430
DESSAU	ARTL	5150/1213	7319/907799	137 0505
DETTWIL	ARTL	5143/1415	7319/540904	137 0155
DEUTSCHSTADT	ARTL	5156/1401	7319/519449	137 0615
DESEN	ARTL	5105/1445	7319/531349	137 0605
DEUTSCHSTADT	ARTL	5148/1252	7319/240430	137 0430

Figure B-6b. Enemy Order of Battle-Ground (TB07) (Page 2)

ENEMY ORDER OF BATTLE
GERMAN ARMY IN BATTLE
PAGE 3 OF 3

NAME	TYPE	LOCATION	DATE
WISCH-SV	AA	5250/1127	2007090575
WISCH-BAC	AA	5213/1143	2007090376
WIRITZ	AA	5254/1127	17 04 39
WITZAH-N	AA	5225/1150	17 04 39
WITZAH	AA	5254/1122	2007090376
WISCH-VEST	AA	5251/1106	17 04 39
WISCH-EST	AA	5157/1120	2007090376
WISCH-SE	AA	5256/1150	17 04 39
WITZAH	AA	5152/1120	2007090376
WITZAH	AA	5256/1150	17 04 39
WITZAH	AA	5152/1120	2007090376
WESAU	AA	5152/1125	2007090376
WITZAH-TRAIG	AA	5050/1150	17 04 39
WEISSENBAU	AA	5150/1127	20070904
WEISSTADT	AA	5149/1129	20070904
WEISSTADT	AA	5142/1155	20070904
WEISSTADT	AA	5040/1110	20070904

Figure B-6c. Enemy Order of Battle-Ground (TB07) (Page 3)

ENEMY ORDER OF BATTLE
AIR BASES OF BATTLE

NAME	TYPE	LAT/LONG	ROUTE	TIME	DATE
SATENAG	F06	522/1295			13 0645
ALLSCHOT-1	F06	513/1050			13 0645
ALLSCHOT-2	F06	512/1048			13 0645
PLAEN-1	F06	503/1147			13 0645
PLAEN-7	F06	5028/1223			13 0645
HERZBURG	F10	5121/1158			13 0645
BERGARTEN	F10	5115/1227			13 0645
BERG	F10	5117/1246			13 0645
BERGZOBORG	F10	5227/1227			13 0645
BERGENHOF	F10	5409/1347			13 0645
FIND	F10	5249/1342			13 0645
BERGZOB	F10	5105/1347			13 0645
BERGALDE	F10	5247/1416			13 0645

Figure B-7. Enemy Order of Battle-Air (TB08)

ENEMY ORDER OF BATTLE
ELECTRONIC ORDER OF BATTLE

NAME	TYPE	DATA/06	INT	DATE/16
PAWNEE	RAO	5223/1234	329718728	137/0439
LEOPARD	RAO	5114/1228	3295205713	137/0439
STEADAL	RAO	5236/1136	3297090713	137/0439
MAZODER	RAO	5218/1134	3297099999	137/0439
ALLIED	RAO	5126/1115	3297150024	137/0439
STEADAL	CB	5238/1148	3297098998	137/0439
SHL-3	CB	5071/1042	3297101117	137/0439
THRO	CB	5247/1143	3298093345	137/0439
MAZODER	CB	5228/1226	329712794	137/0439
SCORPION	CB	5345/1109	329720136	137/0439
URGICLUST	CB	5343/1131	3297064559	137/0439
BALESTED	CB	5179/1102	3297040555	137/0439

Figure B-8. Enemy Order of Battle-Electronic (TB09)

ENEMY ORDER OF BATTLE
SAM/AAA (TB10) BATTLE

PAGE 1 OF 3

NAME	TYPE	DATA	DATA	DATA
ZUG	CAB	021/124	380199423	17/0439
PASCHEN-A	CAB	0223/1149	328165546	17/0439
STOMAL-A	CAB	0235/1149	321P063474	17/0439
WAL LUXEL-A	CAB	0225/1151	321P073999	17/0439
WESSELD-A	CAB	0234/1125	321P039945	17/0439
WOTHE-A	CAB	0244/1149	321P073966	17/0439
ESSENBERG-A	CAB	0227/1155	321P077893	17/0439
ALSTEDT-B	CAB	0220/1131	321P061397	17/0439
ESSENBERG-F	CAB	0216/1155	321P073117	17/0439
HILDE-A	CAB	0221/1237	321P024350	17/0439
TRANBERG-B	CAB	0221/1237	321P120700	17/0439
TRANBERG-C	CAB	0223/1239	321P121950	17/0439
JUTDAM-A	CAB	0158/1252	321P120150	17/0439
FISCH-A	CAB	0254/1249	321P091499	17/0439
GISTHUE-A	AA	0245/1244	320P10073	17/0455
HUTTSOCK-A	AA	0249/1229	320P1222	17/0455
KÜSTELITZ	AA	0225/1295	320P029950	17/0455
KÜTTBERG-A	AA	0259/1202	320P030003	17/0455
KÜLTZ-A	AA	0253/1224	320P04001	17/0455

Figure B-9a. Enemy Order of Battle SAM/AAA (TB10) (Page 1)

ENEMY ORDER OF BATTLE
ENEMY ORDER OF BATTLE

PAGE 2 OF 3

NAME	TYPE	LOCATION	DATE
111 STEIN-A	SAM	5128/1118	17 0300
1111500-A	SAM	5114/1210	17 0150
1111716-A	SAM	5116/1222	17 0150
1111917-A	SAM	5107/1108	17 0150
1111917-B	SAM	5108/1110	17 0150
1111918-A	SAM	5058/1221	17 0150
1111919-A	SAM	5041/1110	17 0150
1111920-A	SAM	5027/1210	17 0150
1111921-A	SAM	5059/1050	17 0150
1111922-A	SAM	5150/1227	17 0150
1111923-A	SAM	5148/1230	17 0150
1111924-A	SAM	5112/1055	17 0150
1111925-A	SAM	5040/1110	17 0150
1111926-A	SAM	5350/1127	17 0150
1111927-A	SAM	5213/1143	17 0150
1111928-A	SAM	5251/1127	17 0150
1111929-A	SAM	5225/1252	17 0150
1111930-A	SAM	5354/1302	17 0150
1111931-A	SAM	5255/1141	17 0150

Figure B-9b. Enemy Order of Battle-SAM/AAA (TB10) (Page 2)

ENEMY ORDER OF BATTLE
ENEMY ORDER OF BATTLE

NAME	TYPE	LOCATION	UNIT	DATE
STOHAL-A	AA	52 37 / 113	22 15 00 00	17/0155
SATZENH-A	AA	52 33 / 116	22 00 00 73	17/0155
HAL. UTHKEL-A	AA	52 30 / 119	22 00 00 59	17/0155
FRANZBURG	AA	52 28 / 127	23 00 20 57	17/0155
BERGE THACO	AA	52 20 / 112	22 00 00 69	17/0155
AL. TENGARDA	AA	52 12 / 123	23 00 11 72	17/0155
STAGGERT-A	AA	51 57 / 114	22 00 00 93	17/0155
GRANIERE	AA	51 49 / 121	23 00 00 73	17/0155
LEIPZIG-A	AA	51 34 / 123	22 00 00 44	17/0155
AL. STEDT-A	AA	51 28 / 118	22 00 00 61	17/0155
ZOLLISCHEN-A	AA	51 14 / 1210	23 01 00 12	17/0155
LEIPZIG-B	AA	51 16 / 122	23 00 51 00	17/0155
ERFURT-A	AA	51 07 / 110	22 00 00 77	17/0155
ERFURT-B	AA	51 04 / 110	22 00 00 73	17/0155
AL. TENGARD	AA	50 58 / 122	23 00 00 61	17/0155
SAALFELD-A	AA	50 44 / 1140	22 00 00 57	17/0155
PLAUE-A	AA	50 27 / 1210	23 00 00 74	17/0155

Figure B-9c. Enemy Order of Battle-SAM/AAA (TB10) (Page 3)

Table 34-11

FLAG NO. / FOOL	EFF PERIOD	137		1500		1505	
		DATE	SURGE	SURGES	SOA	SOA	INT
BASE / UNIT	IN / TYPE	SIZE	%/A				
EDP	COURT	15/11/10	2.0	2.2	0	0	0
EDP	EDP	25/11/11	2.0	2.2	0	0	0
EDP	EDP	12/11/13	2.0	2.2	0	0	0
EDP	EDP	4/11/13	2.0	2.2	0	0	0

Figure B-10. Fighter Schedule (TB11)

ALERT AIRCRAFT

TYPE	REG	TYPE	REG	TYPE	REG	TYPE	REG	TYPE	REG	TYPE	REG
1120	045	A	2A-10	MAX-8	2B	PAISY	525/144	0	525/099		
1121	046	A	2A-10	MAX-70	2B	PAISY	5104/1107	0	5104/599		
1049	056	C	2C-40	AIR-7E	2L	STULLY	5117/1226	15	5117/1700		
1060	045	C	2C-45	2-117	2L	STULLY	5140/1110	0	5140/1209		

Figure B-11. Alert Aircraft (TB12)

COMM AND CONTROL

NAME	TYPE	C/S	LOCATION	LAT/LONG	ITN
16	TAKE		MARKET	51°22'01.1S	74°33'00.0E
0001746	RASS		BEAUFORT	50°35'04.4S	74°05'54.2E
5161000	TAAC	PAST	URBET	50°02'05.0S	74°03'52.2E
17103	CCR	COL	JEROMEVILLE	49°55'06.1S	74°02'37.1E

Figure B-12. Command and Control Centers (TB13)

Figure B-13 Generic Target Types (TB14)

TARGET	DESCRIPTION	TARGET TYPE	
		100	101
100	ANTI-AIR-ATLIEF	AT	ATL
101	ARTILLERY	ATL	ATL
102	BOAT	ATL	ATL
103	EARLY WARNING	ATL	ATL
104	INDUSTRIAL SITE	ATL	ATL
105	MISC. MILITARY SITE	ATL	ATL
106	REFUGIUM, OIL, LUBRICANT DEPOT	ATL	ATL
107	RADAR	ATL	ATL
108	ROCKET	ATL	ATL
109	SOFT-ACT-TO-AIR BIOCUTE SITE	ATL	ATL
110	TANK COLUMN	ATL	ATL
111	TRUCK COLUMN	ATL	ATL

LINE	CODE	DESCRIPTION
A01	4 MAX 04 (5000 00)	
A02	24 MAX 02 (5000 00)	
A03	12 MAX 02 (5000 00)	
A04	24 MAX 02 (5000 00)	
A05	12 MAX 02 (5000 00)	
A06	12 H-117 (7500 00)	
A07	12 MAX 02 (5000 00)	
A08	12 MAX 02 (5000 00)	
A09	12 MAX 02 (5000 00)	
A10	12 MAX 02 (5000 00)	
A11	12 MAX 02 (5000 00)	
A12	12 MAX 20 (5000 00)	
A13	12 MAX 20 (5000 00)	
A14	12 MAX 02 (5000 00)	
B01	12CP00 AND 1 10000T 100 AND 2 ANH-7	
B02	6 CBL-2 AND 5 H-117 (7500 00) AND 2 ANH-7	
B03	5 H-117 (7500 00) AND 6 H-117 (7500 00) AND 1 10000 AND 4 ANH-7	
B04	6 H-117 (7500 00) AND 1 10000 AND 5 H-1 AND 2 ANH-7	
B05	11 H-117 (7500 00) AND 1 10000 AND 2 ANH-7	

Figure B-14a. Ordnance Load Codes (TB15) (Page 1)

PAGE 2 OF 4

ORDNANCE LOAD CODES

CODE	CHARGE
206	4H-117 (7500 lb) AND 6 MARK 83 (1000 lb) AND 1 EODPOD AND 2 AIM-7E
207	6BU-24 AND 1 EODPOD AND 2 AIM-45 AND 2 AIM-7E
208	6BU-24 AND 1 EODPOD AND 5 H-1 AND 2 AIM-7E
209	4 BU-1 CAPALB AND 6 MARK-82 AND 4 AIM-7E
210	7BU-1 CAPALB AND 3 ROCKET PODS AND 4 AIM-7E
211	7BU-1 CAPALB AND 6 MARK-82 (5000 lb) AND 4 AIM-7E
212	7BU-1 CAPALB AND 3 ROCKET PODS AND 4 AIM-7E
213	12BU-10 AND 2 AIM-45 AND 3 ROCKET PODS AND 2 AIM-7E
214	6BU-2 (5000 lb) AND 3 ROCKET PODS AND 4 AIM-7E
215	6BU-2 (5000 lb) AND 4 AIM-7E
216	7BU-1 CAPALB AND 4 AIM-7E
217	12BU-2 (5000 lb) AND 2 AIM-7E
218	7BU-1 CAPALB AND 4 AIM-7E
219	6BU-2 (5000 lb) AND 6 ROCKET PODS AND 4 AIM-7E
220	4 BU-10 AND 2 AIM-7E
221	6BU-2 (5000 lb) AND 6 ROCKET PODS AND 4 AIM-7E
222	9BU-31B (1400 HME) AND 1 EODPOD AND 2 AIM-7E
223	6BU-24 AND 1 EODPOD AND 4 AIM-45 AND 2 AIM-7E
224	4 AIM-7E AND 4 AIM-9B
225	6 MARK 82 (5000 lb) AND 5 H-117 (7500 lb) AND 1 EODPOD AND 2 AIM-7E

Figure B-14b. Ordnance Load Codes (TB15) (Page 2)

CODE	NAME	CODE	NAME
826	CB-24 AND 6 MARK 82 (5000 LB) AND 1 CB-70 AND 2 AH-7E		
827	H-117 (7500 LB) AND 2 AH-7E		
828	CB-24 AND 1 CB-70		
829	ROCKET PODS		
830	CB-42		
831	CB-70 AND 2 AH-45 AND 1 CB-23 CANNON AND 2 AH-7E		
832	CB-70 AND 1 AH-70 AND 1 CB-23 CANNON AND 2 AH-7E		
833	CB-70 AND 1 AH-70 AND 1 CB-23 CANNON AND 2 AH-7E		
834	300 GALLON TANK		
835	BL-1 (5000 LB) AND 12 MARK 82 (5000 LB)		
836	300 GALLON TANK AND 12 MARK 82 (5000 LB)		
837	MARK 82 (5000 LB)		
838	MARK 84 (2000 LB)		
839	300 GALLON TANK AND 10 H-117 (7500 LB)		
840	300 GALLON TANK AND 2 CB-24 AND 12 MARK 82 (5000 LB)		
841	CB-24 AND 2 MARK 84 (2000 LB)		
842	300 GALLON TANK AND 4 MARK 84 (2000 LB)		
843	300 GALLON TANK AND 2 HU-1 (5000 LB)		
844	CB-83 (10000 LB)		

Figure B-14c. Ordnance Load Codes (TB15) (Page 3)

CODE	CODE
02	080-24 AND 20 MAX 32 (5000 LB)
03	080-24
04	2 300 GALLON TANK AND 2 BLU-1 (WEAPAL)
05	2 BLU-1 (WEAPAL)
06	12-117 (7500 LB)
07	2 300 GALLON TANK AND 4 MAX 34 (20000 LB)
08	2 MAX 32 (5000 LB)
09	2 300 GALLON TANK AND 2 BLU-1 (WEAPAL) AND 12 MAX 32 (50000 LB)
09	2 BLU-1 (WEAPAL) AND 8 MAX 32 (5000 LB)
01	2 MAX 32 (5000 LB)
02	2 300 GALLON TANK AND 4 BLU-1 (WEAPAL)
001	4 AIN-38 AND 4 AIN-7E AND 940 POUNDS OF 20MM CANNON
002	2 AIN-38 AND 2 AIN-7E AND 560 POUNDS OF 20MM CANNON
001	1 EC6000 AND 2 AGH-45 AND 1 300-23 CANNON AND 2 AIN-7E
002	1 EC6000 AND 1 AGH-73 AND 1 300-23 CANNON AND 2 AIN-7E

Figure B-14d. Ordnance Load Codes (TB15) (Page 4)

Figure B-15a. Aircraft Characteristics (TB16) (Page 1)

AIRCRAFT CHARACTERISTICS

PAGE 2 OF 3

AC/TYPE	STANCE	CRASH RATE %	MIN. CRASH SPEED - KTAS
F-4C, 3 (CONT.)		250	400
805	806	250	400
807	808	250	400
809	810	250	400
811	812	250	400
813	814	250	400
815	816	250	400
817	818	250	400
819	820	250	400
821	822	250	400

Figure B-15b. Aircraft Characteristics (TB16) (Page 2)

AIRCRAFT	NUMBER	COMBAT WEIGHT	COMBAT PAYLOAD	COMBAT PAYLOAD %	COMBAT		COMBAT		COMBAT		COMBAT		COMBAT		COMBAT		COMBAT	
					900 - STAS	1000	900	1000	900	1000	900	1000	900	1000	900	1000	900	1000
F-4G, 3 (CONT.)	92	32	32	32	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	93	33	33	33	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	94	34	34	34	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	95	35	35	35	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	96	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	97	37	37	37	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	98	38	38	38	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	99	39	39	39	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	100	40	40	40	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	101	41	41	41	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	102	42	42	42	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	103	43	43	43	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	104	44	44	44	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	105	45	45	45	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	106	46	46	46	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	107	47	47	47	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	108	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
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	110	50	50	50	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	111	51	51	51	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	112	52	52	52	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	113	53	53	53	48	48	48	48	48	48	48	48	48	48	48	48	48	48
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	115	55	55	55	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	116	56	56	56	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	117	57	57	57	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	118	58	58	58	48	48	48	48	48	48	48	48	48	48	48	48	48	48
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	120	60	60	60	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	121	61	61	61	48	48	48	48	48	48	48	48	48	48	48	48	48	48
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	123	63	63	63	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	124	64	64	64	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	125	65	65	65	48	48	48	48	48	48	48	48	48	48	48	48	48	48
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	127	67	67	67	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	128	68	68	68	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	129	69	69	69	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	130	70	70	70	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	131	71	71	71	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	132	72	72	72	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	133	73	73	73	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	134	74	74	74	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	135	75	75	75	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	136	76	76	76	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	137	77	77	77	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	138	78	78	78	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	139	79	79	79	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	140	80	80	80	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	141	81	81	81	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	142	82	82	82	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	143	83	83	83	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	144	84	84	84	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	145	85	85	85	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	146	86	86	86	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	147	87	87	87	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	148	88	88	88	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	149	89	89	89	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	150	90	90	90	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	151	91	91	91	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	152	92	92	92	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	153	93	93	93	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	154	94	94	94	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	155	95	95	95	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	156	96	96	96	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	157	97	97	97	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	158	98	98	98	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	159	99	99	99	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	160	100	100	100	48	48	48	48	48	48	48	48	48	48	48	48	48	48

Figure B-15c. Aircraft Characteristics (TB16) (Page 3)

AIRCRAFT CHARACTERISTICS

TYPE	NAME	COMBAT ROLL R.	MIN. COMBAT SEED - RTAS
A-7, A-10 (CONT.)	000	273	150
	001	300	150
	002	300	150
	003	300	150
	004	300	150
	005	300	150
	006	300	150
	007	300	150
	008	300	150
	009	300	150
	010	300	150
	011	300	150
	012	300	150
	013	300	150
	014	300	150
	015	300	150
	016	300	150
	017	300	150
	018	300	150
	019	300	150
	020	300	150
	021	300	150
	022	300	150
F-5E, F-15	M1	1000	450
	M2	1000	450

Figure B-15d. Aircraft Characteristics (TB16) (Page 4)

AIRCRAFT CHARACTERISTICS		PAGE 3 OF 3	
AIRCRAFT	NAME	COMBAT Radius (mi.)	Max. COMBAT
B-17	FIFI	330	370 - 375
	FIFI	330	450

Figure B-15e. Aircraft Characteristics (TB16) (Page 5)

Figure B-16. Identify Line - Targets (TB17)

0 100 200 300 400 500 600 700 800 900 1000

AD-R125 183

CEDA USER'S MANUAL (U) MITRE CORP BEDFORD MA
J R CALABRO ET AL. JAN 83 MTR-8658 ESD-TR-82-418
F19628-82-C-0001

2/2

UNCLASSIFIED

F/G 9/2

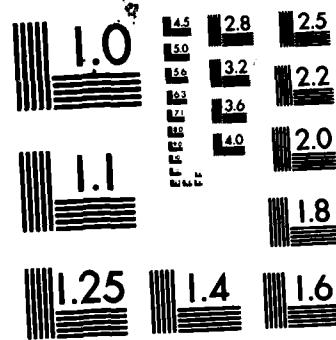
NL

END

FILED

1

0PC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ICAO NAME CLASS MAJOR IN/TYPE INV/TYPE STAR/CELL LAT/LONG

/ / / /

Figure B-17. Identify Line-Friendly Airbases (TB18)

AIR TASKING ORDER

Figure B-18. Air Tasking Order (TB20)

CONTINUE SESSION

Figure B-19. Continue Session (TB21)

APPENDIX C

FUNCTION FLOW

Graphic Options Menu

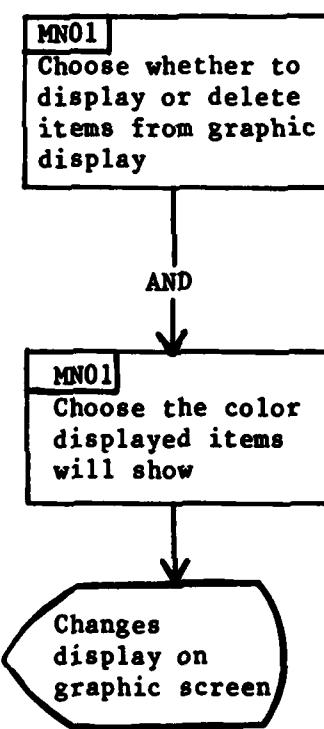


Figure C-1. Function Key #1 - Graphic Options Menu

Data Base Search Menu

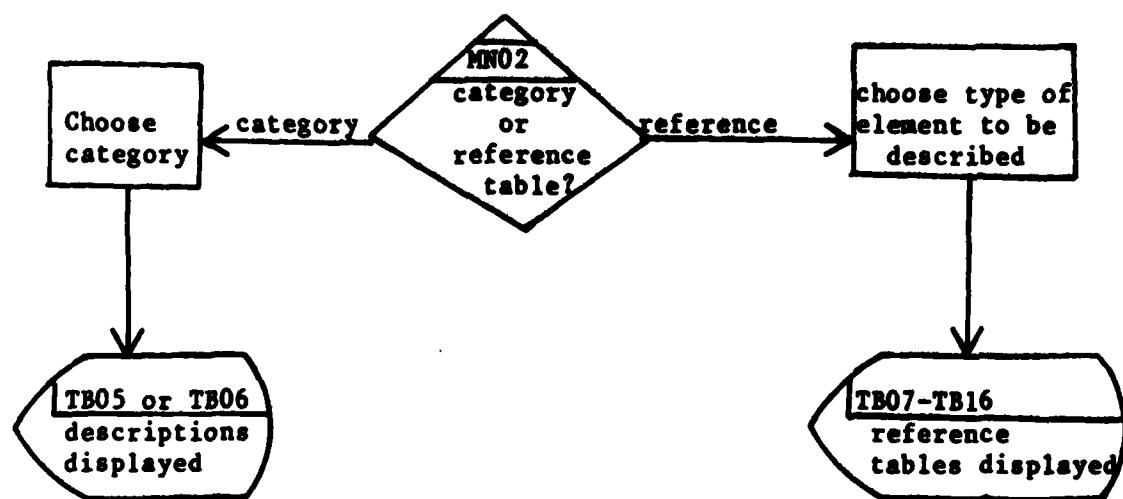


Figure C-2. Function Key #2 - Data Base Search Menu

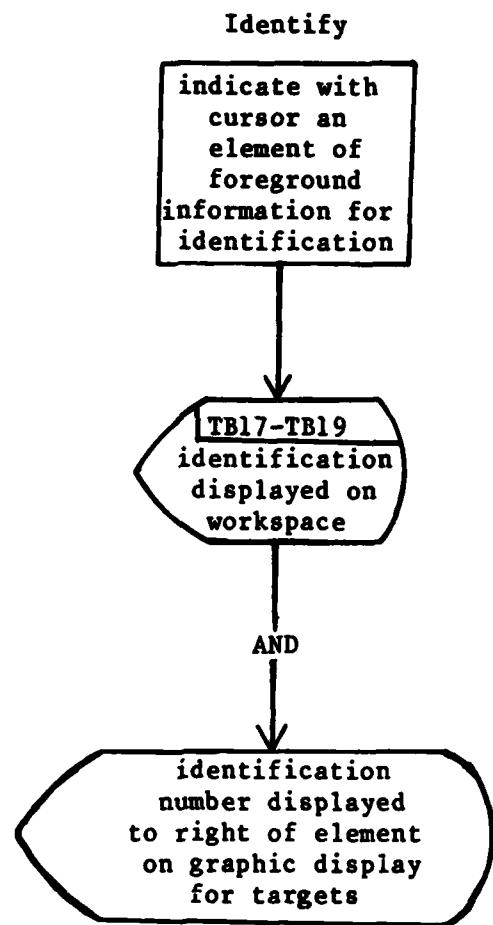


Figure C-3. Function Key #3 - Identify

Full Page Descriptor

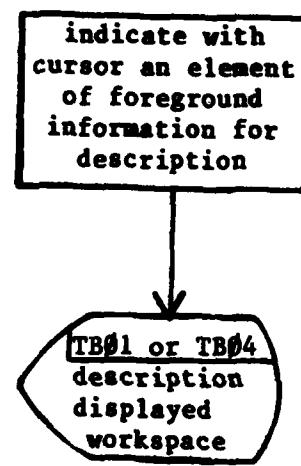


Figure C-4. Function Key #4 - Full Page Descriptor

Grid

grid
superimposed
on
graphic display

Figure C-5. Function Key #5 - Grid

Zoom 1

graphic display
map zoomed
out to original
scale

Figure C-6. Function Key #6 - Zoom 1

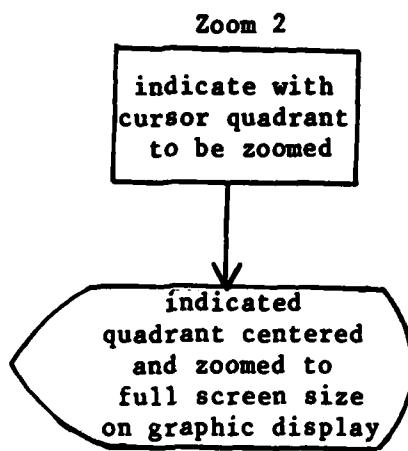


Figure C-7. Function Key #7 - Zoom 2

Zoom 3

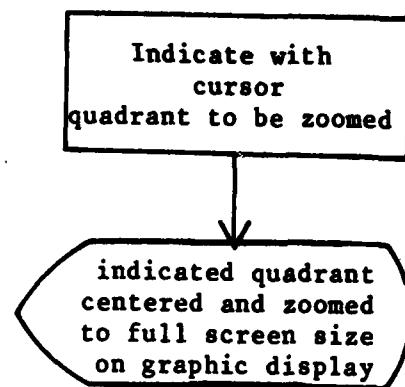


Figure C-8. Function Key #8 - Zoom 3

Airbase Prioritization

MN11
set rules for
computer choice in
case more than
one base satisfies
resource request

Figure C-9. Function Key #9 - Airbase Prioritization Menu

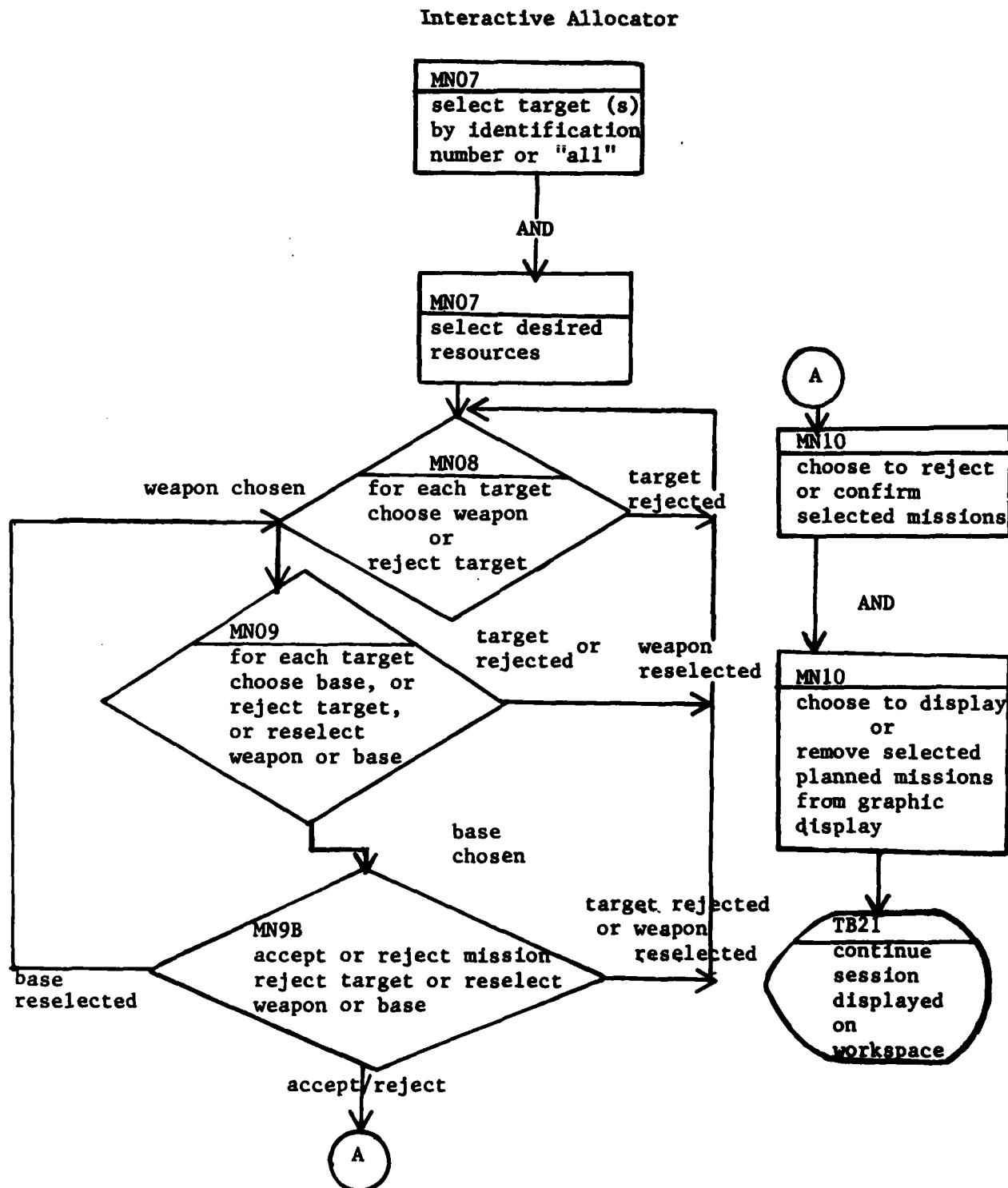


Figure C-10. Function Key #10 - Interactive Allocation Menu

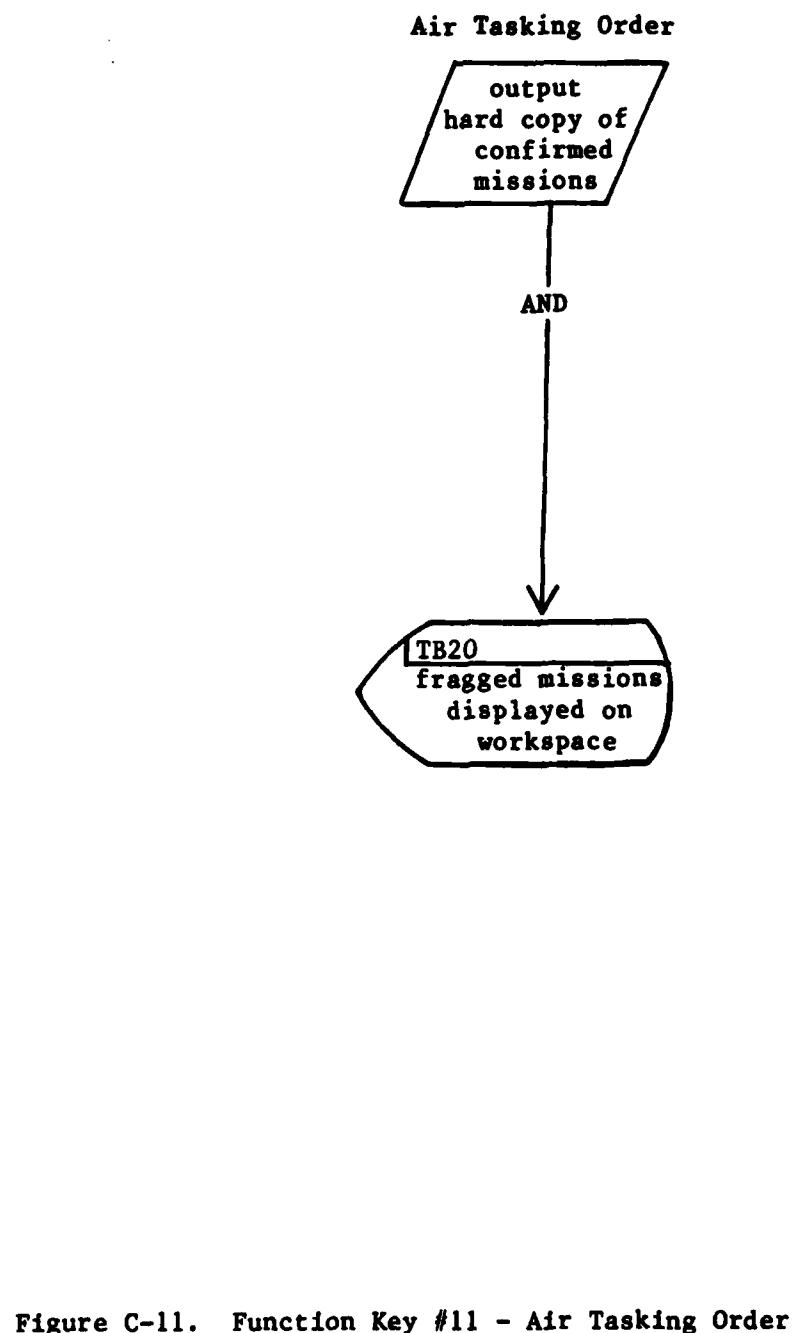


Figure C-11. Function Key #11 - Air Tasking Order

Start/Stop

initiates session
shuts off system
at the end

Figure C-12. Function Key #12. Start/Stop

APPENDIX D

SYSTEM EVENT CODES

Possible values for system events are:

Menus:	'MN01' - Graphic Options Menu 'MN02' - Data Base Search Menu 'MN07' - Weapons Allocation Menu 'MN08' - Interactive Allocation/Weapon Decision Menu 'MN09' - Interactive Allocation/Airbase Decision Menu 'MN98' - Interactive Allocation/Mission Decision Menu 'MN10' - Planned Missions Menu 'MN11' - Airbase Prioritization Menu
Tables:	'TB01' - Target Description 'TB03' - Identified Targets Summary 'TB04' - Friendly Airbase Description 'TB05' - Friendly Airbases 'TB06' - Mission Schedule 'TB07' - Ground Order of Battle 'TB08' - Air Order of Battle 'TB09' - Enemy Order of Battle/Electronic 'TB10' - Enemy Order of Battle/Threat 'TB11' - Fighter Schedule 'TB12' - Alert Aircraft 'TB13' - Command and Control Elements 'TB14' - Target Type 'TB15' - Ordnance Load Codes 'TB16' - Aircraft Characteristics 'TB17' - Identify Line/Targets 'TB18' - Identify Line/Friendly Airbase 'TB20' - Air Tasking Order 'TB21' - Continue Session
Graphics:	'AR01' - Geographic Area #1 - total area 'AR02' - Geographic Area #2 - first quadrant 'AR03' - Geographic Area #3 - second quadrant 'AR04' - Geographic Area #4 - third quadrant 'AR05' - Geographic Area #5 - fourth quadrant 'AR06' - Geographic Area #6 - first quadrant of Area #2 'AR07' - Geographic Area #7 - second quadrant of Area #2 'AR08' - Geographic Area #8 - third quadrant of Area #2 'AR09' - Geographic Area #9 - fourth quadrant of Area #2 'AR10' - Geographic Area #10 - first quadrant of Area #3 'AR11' - Geographic Area #11 - second quadrant of Area #3 'AR12' - Geographic Area #12 - third quadrant of Area #3 'AR13' - Geographic Area #13 - fourth quadrant of Area #3 'AR14' - Geographic Area #14 - first quadrant of Area #4 'AR15' - Geographic Area #15 - second quadrant of Area #4 'AR16' - Geographic Area #16 - third quadrant of Area #4

"AR17" - Geographic Area #17 - fourth quadrant of Area #4
"AR18" - Geographic Area #18 - first quadrant of Area #5
"AR19" - Geographic Area #19 - second quadrant of Area #5
"AR20" - Geographic Area #20 - third quadrant of Area #5
"AR21" - Geographic Area #21 - fourth quadrant of Area #5

APPENDIX E

USER RESPONSE CODES

Possible values for user response are:

'P01'	-	Function Key #1
'P02'	-	Function Key #2
'P03'	-	Function Key #3
'P04'	-	Function Key #4
'P05'	-	Function Key #5
'P06'	-	Function Key #6
'P07'	-	Function Key #7
'P08'	-	Function Key #8
'P09'	-	Function Key #9
'P10'	-	Function Key #10
'P11'	-	Function Key #11
'P12'	-	Function Key #12
'P13'	-	Function key #13
'ENTR'	-	Menu entry

The function keys are set prior to session initiation. Refer to the CEDA User's Manual for information on how they are set for the initial system.

APPENDIX F

SAMPLE SESSION DATA

LOGIN	SMITH	PFC	22682	08:51:38
EVENT	AR01	0.363E+02	F 05	0.000E+00
EVENT	AR01	0.972E+01	F 08	0.000E+00
EVENT	AR09	0.269E+02	F 03	0.000E+00
EVENT	TB17	0.405E+01	F 03	0.000E+00
EVENT	TB17	0.117E+01	F 03	0.000E+00
EVENT	TB17	0.262E+02	F 02	0.000E+00
EVENT	MN02	0.332E-01	ENTR	0.945E+01
		YNNNNNNNNNNNN		
EVENT	TB05	0.560E+02	F 04	0.000E+00
EVENT	TB01	0.471E+02	F 06	0.000E+00
EVENT	AR01	0.130E+02	F 04	0.000E+00
EVENT	TB04	0.394E+02	F 04	0.000E+00
EVENT	TB04	0.587E+02	F 16	0.000E+00

GLOSSARY

Terms

Foreground Information:	Any Target, airbase, or city displayed on the map.
Allocation Pairing Lines:	Line drawn from the friendly airbase that will fly the mission to the target. This is not a flight path.
Confirmed Mission:	A mission that has been explicitly confirmed via Planned Missions menu but not yet sent to wing from the ATO function.
Planned Mission:	A confirmed mission that has been sent to wing command via ATO function. Also called a scheduled mission.
Menu:	A tabular display accepting user input.
Monitor:	The twenty-fourth line of the VT100 screen on which machine error messages are displayed.
Planned Mission:	The union of all proposed and confirmed missions.
Proposed Mission:	A mission that has been accepted during the last phase of allocation but has not yet been confirmed.
Table:	A tabular display printing information only.
Workspace:	The first 23 lines of VT100 screen on which tabular displays are presented.

Acronyms & Abbreviations

AAA:	anti-aircraft artillery
A/C:	aircraft
ASN:	assignment indicator
ATO:	air tasking order
AWOP:	Automated Weaponeering Optimization Program
BE:	basic encyclopedia
CAS:	close air support
C/S:	call sign
EOB:	enemy order of battle
EW:	electronic warfare
EW/GCI:	early warning/ground control interrupt cite
G/A:	ground or air alert
ICAO:	International Civil Aeronautics Organization - unique airbase code
KTAS:	knots true air speed
MSN:	mission (type if alone)
NN/TYPE:	number of that type of aircraft
OCA:	offensive counter air
ORD:	ordnance
PD:	probability of damage
POL:	petroleum, oil and lubricants
PRI:	priority
SAM:	surface-to-air missiles

SCL: standard configuration load
STA: status
TDZ: time of departure (zulu)
TGT: target
TOTZ: time over target (zulu)
UTM: universal transverse mercator - geographic coordinates
WW: wild weasel